

CLAIMS

What is claimed is:

1. An optical encoder comprising:
an optical grating for modulating a beam of light;
a sensor for sensing modulated light provided by the optical grating;
the optical grating and the sensor being movable relative to each other; and
the optical grating including a plurality of contiguously adjacent first encoder bars and a plurality of second encoder bars, wherein the contiguously adjacent first encoder bars and the second encoder bars are substantially uniformly spaced and wherein the first encoder bars are optically configured to change an amplitude of an output of the sensor.
2. The optical encoder of claim 1 wherein the second encoder bars are of substantially identical width.
3. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are wider than the second encoder bars.
4. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are wider than the second encoder bars and are of gradually changing width.
5. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are narrower than the second encoder bars.

6. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are narrower than the second encoder bars and are of gradually changing width.

7. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are shorter than the second encoder bars.

8. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are shorter than the second encoder bars and are of gradually changing height.

9. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are taller than the second encoder bars.

10. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are taller than the second encoder bars and are of gradually changing height.

11. The optical encoder of claim 1 wherein the second encoder bars are of substantially identical darkness.

12. The optical encoder of claim 1 wherein the contiguously first encoder bars are lighter than the second encoder bars.

13. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are darker than the second encoder bars.

14. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are more transmissive than the second encoder bars.

15. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars are less transmissive than the second encoder bars.

16. The optical encoder of claim 1 wherein the contiguously adjacent first encoder bars and the second encoder bars include non-linear sides.

17. The optical encoder of claim 1 wherein the plurality of second encoder bars are disposed on both sides of the contiguously adjacent first encoder bars.

18. An optical encoder comprising:
an optical grating for modulating a beam of light;
a sensor for sensing modulated light provided by the optical grating;
the optical grating and the sensor being movable relative to each other; and
the optical grating including a plurality of contiguously adjacent first encoder bars of respective first encoder bar widths and a plurality of second encoder bars of a substantially constant second encoder bar width, wherein the contiguously adjacent first encoder bars and the second encoder bars have non-linear sides and are substantially uniformly spaced, and wherein each of the first encoder bar widths is different from the substantially constant second encoder bar width.

19. The optical encoder of claim 18 wherein the first encoder bars are narrower than the second encoder bars.

20. The optical encoder of claim 18 wherein the first encoder bars are narrower than the second encoder bars and are of gradually changing width.

21. The optical encoder of claim 18 wherein the first encoder bars are wider than the second encoder bars.

22. The optical encoder of claim 18 wherein the first encoder bars are wider than the second encoder bars and are of gradually changing width.

23. The optical encoder of claim 18 wherein the plurality of second encoder bars are disposed on both sides of the contiguously adjacent first encoder bars.

24. A position encoder comprising:
an optical track for providing a pattern of alternating light and dark areas, wherein the dark areas are substantially uniformly spaced and optically encoded to define a predetermined position; and
a quadrature sensor for detecting the pattern of alternating light and dark areas.

25. A position encoder comprising:
means for providing a pattern of alternating light and dark areas;
and

means for detecting movement of the pattern to determine a position of the pattern.

26. An optical grating comprising:

a plurality of contiguously adjacent first encoder bars;

a plurality of second encoder bars; and

wherein the contiguously adjacent first encoder bars and the second encoder bars are substantially uniformly spaced and wherein the first encoder bars are optically different from the second encoder bars.

27. The optical grating of claim 26 wherein the second encoder bars are of substantially identical width.

28. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are narrower than the second encoder bars.

29. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are narrower than the second encoder bars and are of gradually changing width.

30. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are wider than the second encoder bars.

31. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are wider than the second encoder bars and are of gradually changing width.

32. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are shorter than the second encoder bars.

33. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are shorter than the second encoder bars and are of gradually changing height.

34. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are taller than the second encoder bars.

35. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are taller than the second encoder bars and are of gradually changing height.

36. The optical grating of claim 26 wherein the second encoder bars are of substantially identical darkness.

37. The optical grating of claim 26 wherein the contiguously first encoder bars are lighter than the second encoder bars.

38. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are darker than the second encoder bars.

39. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are more transmissive than the second encoder bars.

40. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars are less transmissive than the second encoder bars.

41. The optical grating of claim 26 wherein the contiguously adjacent first encoder bars and the second encoder bars include the non-linear sides.

42. The optical grating of claim 26 wherein the plurality of second encoder bars are disposed on both sides of the contiguously adjacent first encoder bars.

43. An optical grating comprising:

a plurality of contiguously adjacent first encoder bars having respective first encoder bar widths;

a plurality of second encoder bars having a substantially constant second encoder bar width; and

wherein the contiguously adjacent first encoder bars and the second encoder bars have non-linear sides and are substantially uniformly spaced, and wherein the first encoder bar widths are different from the second encoder bar width.

44. The optical grating of claim 43 wherein the first encoder bars are narrower than the second encoder bars.

45. The optical grating of claim 43 wherein the first encoder bars are narrower than the second encoder bars and are of gradually changing width.

46. The optical grating of claim 43 wherein the first encoder bars are wider than the second encoder bars.

47. The optical grating of claim 43 wherein the first encoder bars are wider than the second encoder bars and are of gradually changing width.

48. The optical grating of claim 43 wherein the plurality of second encoder bars are disposed on both sides of the contiguously adjacent first encoder bars.

49. An optical grating comprising:

a first encoder bar;

a plurality of second encoder bars; and

wherein the contiguously adjacent first encoder bar and the second encoder bars are substantially uniformly spaced and wherein the first encoder bar is optically different from the second encoder bars.

50. The optical grating of claim 49 wherein the plurality of second encoder bars are of substantially identical width.

51. The optical grating of claim 49 wherein the first encoder bar is narrower than each of the plurality of second encoder bars.

52. The optical grating of claim 49 wherein the first encoder bar is wider than each of the plurality of second encoder bars.

53. The optical grating of claim 49 wherein the first encoder bar is shorter than each of the plurality of second encoder bars.

54. The optical grating of claim 49 wherein the first encoder bar is taller than each of the plurality of second encoder bars.

55. The optical grating of claim 49 wherein the plurality of second encoder bars are of substantially identical darkness.

56. The optical grating of claim 49 wherein the first encoder bar is lighter than each of the plurality of second encoder bars.

57. The optical grating of claim 49 wherein the first encoder bar is darker than each of the plurality of second encoder bars.

58. The optical grating of claim 49 wherein the first encoder bar is more transmissive than each of the plurality of second encoder bars.

59. The optical grating of claim 49 wherein the first encoder bar is less transmissive than each of the plurality of second encoder bars.

60. The optical grating of claim 49 wherein the first encoder bar and the plurality of second encoder bars include non-linear sides.

61. The optical grating of claim 49 wherein the plurality of second encoder bars are disposed on both sides of the first encoder bar.